Amendments to the Claims

Claim 1 (Currently amended): System for the extrapolation of a glucose concentration, comprising:

a data input device for entering insulin doses administered (I_i) and their times of administration (t_i),

the same or a second data input device for entering carbohydrates (KH_j) consumed or to be consumed, and their times of consumption (t_j),

a unit for determining the actual glucose concentration (G_a) in a patient's bodily fluid at a specific point in time (t_a),

a memory unit for storing administered insulin doses and their times of administration, and carbohydrates consumed and their times of consumption,

an evaluation device formed for evaluating the data stored in the memory unit and based upon that stored data, for extrapolating a glucose concentration at a point in time (t_p), whereby t_p is after t_a, and the extrapolation comprises the following steps:

determination of the portion (I_{wirk}) of insulin doses that take effect within the interval between t_a and t_p,

determination of the portion (KH_{wirk}) of carbohydrates consumed that take effect in the interval between t_a and t_p, and

determination of an extrapolated glucose concentration G_p at the point in time tp using I_{wirk} and KH_{wirk}.

Claim 2 (Previously Amended): System according to Claim 1, in which the glucose concentration G_p is determined at the point in time using the following formula:

$$G_p = G_a - I_{wirk}(D)(SE) + KH_{wirk}(E) + X,$$

whereby D is an empirical weighting factor, SE is the patient's insulin sensitivity, E is a factor, and X=0 or is unequal to zero.

Claim 3 (Currently Amended): System according to Claim 2, in which $E = R_{KH}(F)$, whereby R_{KH} is the carbohydrate reduction factor and F is 0.25 mmol/l/g ~~an empirical factor~~.

Claim 4 (Previously Amended): System according to Claim 2, in which X, as the addend is equal to GB, whereby GB = I_{basal} (SE)(C) and I_{basal} is the patient's basal insulin demand over 24 hours, SE is the patient's insulin sensitivity, and C is an empirical weighting factor.

Claim 5 (Currently Amended): System according to Claim 2, in which X, as the addend, ~~includes the quantity~~ is equal to SG(A), whereby SG is the slope of the glucose concentration at the point in time t_a, and A is an empirical weighting factor.

Claim 6 (Original): System according to Claim 1, in which the unit used to determine the actual glucose concentration G_a is a microdialysis device.

Claim 7 (Original): System according to Claim 1 that also includes a display unit for displaying the extrapolated glucose concentration G_p.

Claim 8 (Original): System according to Claim 1 that also includes a warning unit that emits a warning signal when the extrapolated glucose concentration G_P is outside a selected normal range.

Claim 9 (Original): System according to Claim 1 in which the user enters the carbohydrate units consumed (KH_j).

Claim 10 (Original): System according to Claim 1 in which the system contains a control unit for an insulin infusion device or is connected to such a device, and in which the insulin doses administered (I_i) and their times of administration (t_i) are transmitted from the control unit to the date input device for entering insulin doses.

Claim 11(Cancelled).

Claim 12 (Previously Amended): System according to Claim 1 in which the quantity of carbohydrates consumed (KH_{wirk}) that takes effect in the period between t_a and t_p is calculated using the following formula

$$KH_{WIRK} = \sum_{j=1}^{m} \int_{t_a}^{t_p} C_{KH}(t)dt\ (KH_j)$$

whereby C_{KH} represents the quantity of carbohydrates that are bioavailable at the point in time t and therefore represents the carbohydrate flooding profile, with

$$\int_0^\infty C_{KH}(t)dt = 1.$$

Claims 13-31 (Cancelled).

Claim 32 (Currently Amended): System according to Claim 4, in which X, as the addend, ~~includes the quantity~~ is equal to SG (A), whereby SG is the slope of the glucose concentration at the point in time ta, and A is an empirical weighting factor.

Claim 33 (Currently Amended): ~~System according to claim 1 in which~~ System for the extrapolation of a glucose concentration, comprising:

a data input device for entering insulin doses administered (I_j) and their times of administration (t_j),

the same or a second data input device for entering carbohydrates (KH_j) consumed or to be consumed, and their times of consumption (t_j),

a unit for determining the actual glucose concentration (G_a) in a patient's bodily fluid at a specific point in time (t_a),

a memory unit for storing administered insulin doses and their times of administration, and carbohydrates consumed and their times of consumption,

an evaluation device for evaluating the data stored in the memory unit and extrapolating a glucose concentration at a point in time (t_p), whereby t_p is after t_a, and the extrapolation comprises the following steps:

determination of the portion (I_{wirk}) of insulin doses that take effect within the interval between t_a and t_p,

determination of the portion (KH_{wirk}) of carbohydrates consumed that take effect in the interval between t_a and t_p, and

determination of an extrapolated glucose concentration G_p at the point in time tp using I_{wirk} and KH_{wirk}, wherein

the portion of insulin doses (I_{wirk}) that take effect in the period between t_a and t_p is calculated using the following formula

$$I_{WIRK} = \sum_{i=1}^{n} \int_{t_a}^{t_p} C_I(t)dt\,(I_i);\ n = \text{number of insulin doses to be considered}$$

whereby CI represents the quantity of insulin that is bioavailable at the point in time t and therefore represents the insulin effectiveness profile; with

$$\int_0^\infty C_I(t)dt = 1.$$

Claim 34 (Previously Amended): System according to claim 2 in which the portion of insulin doses (I_{wirk}) that take effect in the period between t_a and t_p is calculated using the following formula

$$I_{WIRK} = \sum_{i=1}^{n} \int_{t_a}^{t_p} C_I(t)dt\,(I_i);\ n = \text{number of insulin doses to be considered}$$

whereby CI represents the quantity of insulin that is bioavailable at the point in time t and therefore represents the insulin effectiveness profile; with

$$\int_0^\infty C_I(t)dt = 1.$$

Claim 35 (Previously Amended): System according to Claim 2 in which the quantity of carbohydrates consumed (KH_{wirk}) that takes effect in the period between t_a and t_p is calculated using the following formula

$$KH_{WIRK} = \sum_{j=1}^{m} \int_{t_a}^{t_p} C_{KH}(t)dt(KH_j)$$

whereby C_{KH} represents the quantity of carbohydrates that are bioavailable at the point in time t and therefore represents the carbohydrate flooding profile, with

$$\int_0^\infty C_{KH}(t)dt = 1.$$

Claim 36 (Previously added): System according to Claim 1, in which the point in time t_p is from 0.5 to 5 hours after t_a.

Claim 37 (Previously added): System according to Claim 1, in which the point in time t_p is at least 2 hours after t_a and up to 4 hours after t_a.

Claims 38-45 (Cancelled).